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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REG'D 11 JAN 2002

WIPO PCT

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| | | |
|--|--|---|
| Applicant's or agent's file reference P51017 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/US00/24514 | International filing date (day/month/year) 07 SEPTEMBER 2000 | Priority date (day/month/year) 07 SEPTEMBER 1999 |
| International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet. | | |
| Applicant SMITHKLINE BEECHAM CORPORATION | | |

| | |
|----|---|
| 1. | This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. |
| 2. | <p>This REPORT consists of a total of <u>4</u> sheets.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p> |
| 3. | <p>This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application |

| | |
|--|--|
| Date of submission of the demand 01 MARCH 2001 | Date of completion of this report 03 OCTOBER 2001 |
| Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 | Authorized officer JANE FAN |
| Facsimile No. (703) 305-3230 | Telephone No. (703) 308-4705 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/24514

I. Basis of the report1. With regard to the **elements** of the international application: *

- ☒ the international application as originally filed
- ☒ the description:
pages 1-62 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the claims:
pages 63-67 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the drawings:
pages none , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the sequence listing part of the description:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/24514

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)

Claims 1-26 YESClaims none NO

Inventive Step (IS)

Claims 10-26 YESClaims 1-9 NO

Industrial Applicability (IA)

Claims 1-26 YESClaims none NO**2. citations and explanations (Rule 70.7)**

Claims 1-9 lack an inventive step under PCT Article 33(3) as being obvious over CA 126:117964 by Takeno et al.. CA 126:117964 teaches the adjacent homologs of the claimed compounds. In view of the closeness of structures, the adjacent claimed compounds are suggested.

Claims 10-26 meet the criteria set out in PCT Article 33(3), because the prior art does not teach or fairly suggest the claimed uses.

Claims 1-26 meet the criteria set out in PCT Article 33(2),33(4) because the prior art does not teach or fairly suggest the claimed compounds and uses.

----- NEW CITATIONS -----

NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/24514

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:
IPC(7): IPC7 A61K 31/44, 31/4427, 31/444, 31/4375; C07D 213/36, 413/08, 417/08, 401/08 and US Cl.: 546/312, 271.4, 269.7, 122, 261; 514/ 352, 340, 235.8, 300, 335; 544/124

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: MARY E. MCCARTHY
SMITHKLINE BEECHAM CORPORATION
CORPORATE INTELLECTUAL PROPERTY,
UW2220
709 SWEDELAND ROAD, P. O. BOX 1539
KING OF PRUSSIA PA 19406-0939

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

| | |
|--|--|
| Applicant's or agent's file reference P51017 | Date of Mailing <i>(day/month/year)</i> 26 FEB 2001 |
| International application No. PCT/US00/24514 | International filing date <i>(day/month/year)</i> 07 SEPTEMBER 2000 |
| Applicant SMITHKLINE BEECHAM CORPORATION | |

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.
Filing of amendments and statement under Article 19:
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO:
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

 Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

 Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

| | |
|---|--|
| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230 | Authorized officer JANE FAN Telephone No. (703) 305-3100 <div style="text-align: right;"> TERRY J. DEY PARALEGAL SPECIALIST TECHNOLOGY CENTER 1600 </div> |
|---|--|

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

| | |
|---|---|
| Date of mailing (day/month/year) 05 June 2001 (05.06.01) | Applicant's or agent's file reference P51017 |
| International application No. PCT/US00/24514 | Priority date (day/month/year) 07 September 1999 (07.09.99) |
| International filing date (day/month/year) 07 September 2000 (07.09.00) | |
| Applicant MANLEY, Peter, J. et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 01 March 2001 (01.03.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer J. Leitao Telephone No.: (41-22) 338.83.38 |
|---|---|

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



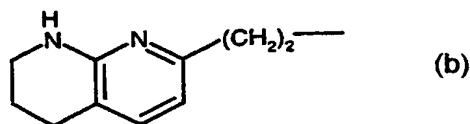
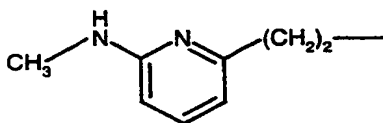
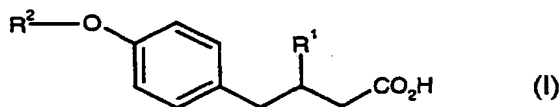
(43) International Publication Date
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number
WO 01/17959 A2

- (51) International Patent Classification⁷: C07D
- (21) International Application Number: PCT/US00/24514
- (22) International Filing Date:
7 September 2000 (07.09.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/152,780 7 September 1999 (07.09.1999) US
- (71) Applicant (for all designated States except US):
SMITHKLINE BEECHAM CORPORATION
[US/US]; One Franklin Plaza, Philadelphia, PA 19103 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **MANLEY, Peter, J.** [US/US]; 900 Yorkshire Way, Harleysville, PA 19438 (US). **MILLER, William, H.** [US/US]; 132 Chinaberry Lane, Collegeville, PA 19426 (US). **UZINSKAS, Irene, N.** [US/US]; 154 Vassar Circle, Villanova, PA 19085 (US).
- (81) Designated States (national): AE, AL, AU, BA, BB, BG, BR, CA, CN, CZ, DZ, EE, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MA, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, TZ, UA, US, UZ, VN, YU, ZA.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— Without international search report and to be republished upon receipt of that report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VITRONECTIN RECEPTOR ANTAGONISTS



(57) Abstract: Compounds of formula (I) are disclosed which are vitronectin receptor antagonists and are useful in the treatment of osteoporosis wherein R¹ is Het- or Ar; R² is formula (a) or formula (b); or a pharmaceutically acceptable salt thereof.

WO 01/17959 A2